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ments, prohibits the employment of minors in any capacity in establishments where poisonous products are manufactured or poisonous gases generated.

A similar law in Pennsylvania forbids the employment of minors in any occupation dangerous to life or limb or injurious to the health or morals of said minor.

A recently enacted law in Missouri provides for the control of dust in lead and zinc mines and a supplementary law requires that the owner provide dressing rooms for employees and operators of lead and zinc mines.

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## ANOPHELES CRUCIANS.

### THEIR INFECTIBILITY WITH THE PARASITES OF TERTIAN MALARIA.

By M. BRUN MITZMAIN, Technical Assistant, United States Public Health Service.

In view of the common impression that *Anopheles crucians* Wied. is susceptible to infection with the parasites of estivo-autumnal malaria (*Plasmodium falciparum*) only, it is of interest to record certain experimental findings with relation to those of tertian fever (*P. vivax*).

In the course of a series of infectivity experiments with *Anopheles punctipennis*, conducted in New Orleans, 19 specimens of *Anopheles crucians* were fed simultaneously, February 6 and 7, 1916, on the blood of an individual suffering from tertian malarial fever. Examination of the blood of this case showed large numbers of asexual parasites, and but few mature gametocytes.

Of the total of 19 specimens, 7 died within five days after feeding; 3 of these were found to contain numerous immature zygotes, and in 1 that had died on the second day, the vermiculus stage was identified in the crushed stomach contents.

Two of the 12 survivors were found to be infected, 11 and 13 days, respectively, after biting the blood donor. In both mosquitoes the salivary glands harbored sporozoites; in one instance a heavy infection, in the other a slight infection, was noted.

The salivary glands of the former appeared granular, with numerous clusters of filiform organisms distributed throughout the cells, becoming immediately active upon pressure on the containing gland. In the latter, the terminal cells of at least four lobes of the salivary glands were invaded by sporozoites, which, when expressed were but sluggishly motile.

The sporozoites in the fresh state were typical in appearance, having a large refractile sporelike nucleus, which, when stained with Giemsa stain, showed the characteristic chromatin red.

Oocysts on the stomach wall were represented in both mosquitoes by a few shrunken bodies, the contents of which had apparently been

expelled, except for the presence of a few sporozoites in the one which had, no doubt, been ruptured during the dissection of the mosquito.

The 38 specimens of *Anopheles punctipennis* used in parallel feedings from the same case serve as a control series, 11 of these becoming infected from the sixth to the sixteenth day after biting; in six of these the salivary glands were extensively invaded with sporozoites.

Two specimens of *Anopheles quadrimaculatus* used under the same conditions as the foregoing remained negative throughout the course of the experiment.

During the experiment the specimens of *Anopheles crucians* and controls were allowed the usual diet of raisins and water and kept in lantern globes in an incubator registering 25.5° to 26° C. The mosquitoes were not disturbed during the five days following the single infective feeding, except that the dead and feeble individuals were removed for dissection.

The following table summarizes the experimental data:

Species of Anopheles.	Number applied.	Number times applied to case of tertian.	Remarks.
<i>A. punctipennis</i> .....	38	1	11 infected 6-16 days; 6 gland and stomach; 5 stomach.
<i>crucians</i> .....	19	1	2 infected, 11-13 days, both glands and stomach; 3 immature zygotes on stomach wall.
<i>quadrimaculatus</i> .....	2	1	No infection.

## PLAGUE-PREVENTION WORK.

### CALIFORNIA.

The following reports of plague-prevention work in California were received from Surg. Boggess, of the United States Public Health Service, in charge of the work:

WEEK ENDED FEB. 26, 1916.

#### SAN FRANCISCO, CAL.

##### RAT PROOFING.

New buildings:	
Inspections of work under construction.	150
Basements concreted (square feet, 35,350).....	52
Floors concreted (square feet, 5,870).....	5
Yards, passageways, etc. (square feet, 11,539).....	57
Total area of concrete laid (square feet).	52,759
Class A, B, and C (fireproof) buildings:	
Inspections made.....	120
Roof and basement ventilators, etc., screened.....	639
Wire screening used (square feet).....	3,278
Openings around pipes, etc., closed with cement.....	582
Sidewalk lens lights replaced.....	1,008

#### SAN FRANCISCO, CAL.—Continued.

##### RAT PROOFING—continued.

Old buildings:	
Inspections made.....	370
Wooden floors removed.....	35
Yards and passageways, planking removed.....	16
Cubic feet new foundation walls installed.....	6,505
Concrete floors installed (square feet, 13,163).....	26
Basements concreted (square feet, 16,965).....	21
Yards and passageways, etc., concreted (square feet, 7,307).....	41
Total area concrete laid (square feet).....	37,435
Floors rat proofed with wire cloth (square feet, 6,342).....	5
Buildings razed.....	16